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APHANOGMUS FLORIDANUS, A PRIMARY PARASITE OF *FELTIELLA ACARIVORA*, A PREDATOR OF SPIDER MITES ON STRAWBERRY (HYMENOPTERA: CERAPHRONIDAE; DIPTERA: CECIDOMYIIDAE)

E. R. OATMAN

Division of Biological Control, Department of Entomology, University of California, Riverside, California 92521.

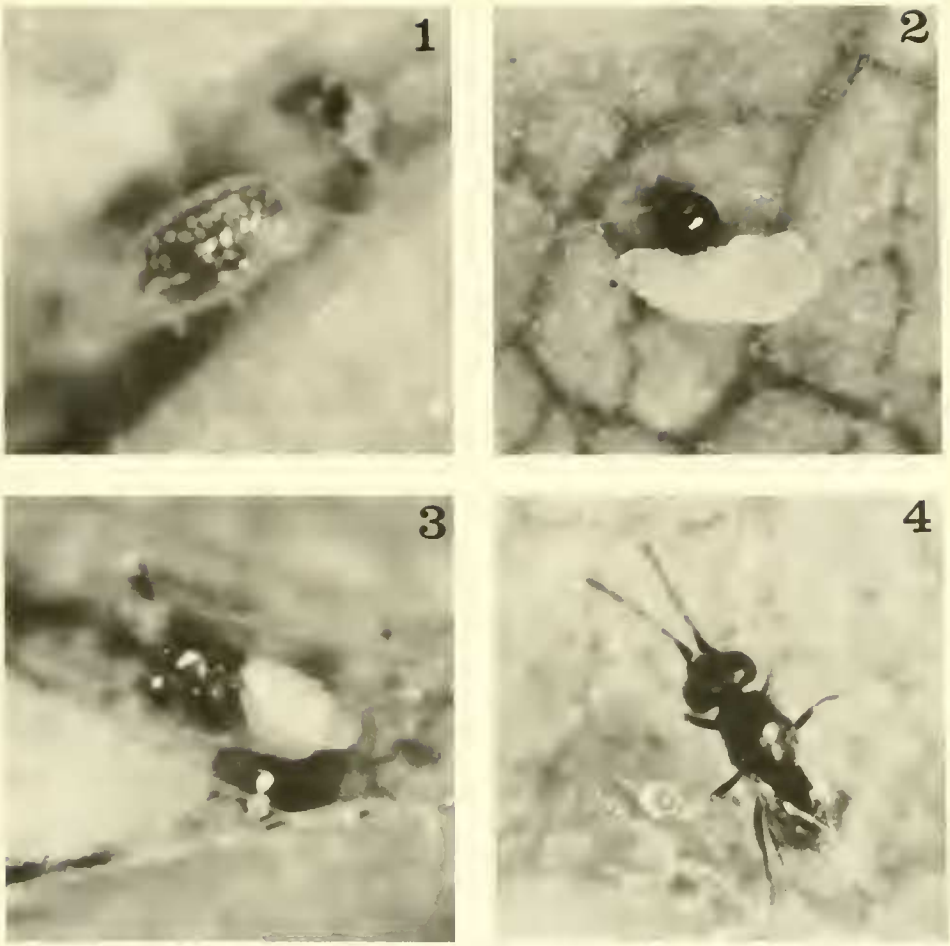
Abstract.—The parasitic activity of a ceraphronid, *Aphanogmus floridanus* Ashmead, is briefly given and its life stages are figured. The parasite was found to be a major mortality factor, affecting *Feltiella acarivora* Felt, a cecidomyiid predator of the two-spotted spider mite, *Tetranychus urticae* Koch, on strawberry.

While studying predation on the two-spotted spider mite, *Tetranychus urticae* Koch, on strawberry (Oatman et al., 1985), a minute, black hymenopterous parasite was observed to emerge from cocoons of *Feltiella acarivora* (Felt), a cecidomyiid predator of spider mites. To determine the identity of the parasite species involved and the extent of parasitization, cecidomyiid cocoons were collected at random from spider mite-infested strawberry plants in untreated check plots during May and June in 1979 through 1982, and in April, May, and June in 1983. The cocoons, attached naturally to pieces of leaflets, were isolated individually in gelatin capsules (size 000) and held for adult (host parasite) emergence.

The parasites obtained were identified as *Aphanogmus floridanus* Ashmead and *Aphanogmus* sp. (apparently new) (Ceraphronidae) by P. Dessart, Taxonomist, Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium. Of 382 specimens examined from the 1983 material, 372 (97.4%) were *A. floridanus* and 10 (2.6%) were *Aphanogmus* sp.

Ashmead (1893) described *A. floridanus* from a male and female collected by sweeping on the edge of a swamp near Jacksonville, Florida. Muesebeck (1979) noted that some species of *Aphanogmus* are primary parasites of certain Diptera, particularly Cecidomyiidae, and others are hyperparasites. He also reported that *A. floridanus* was recorded from Florida, Ohio, and South Carolina, and that the species had been reared from two cecidomyiids, *Arthrocnodax carolina* Felt and *Mycodiplosis acarivora* (Felt), both now in *Feltiella*.

Except for the above, there is no published information on *A. floridanus*. In the present study, *A. floridanus* was determined to be an endoparasite of *F. acarivora* larvae. The parasite larva emerges from the pupating host larva after the latter spins its cocoon. The mature parasite larva is pinkish-orange dorsally and milky-white ventrally (Fig. 1). The prepupa is milky-white. The head and thorax of the pupa are dark, the abdomen milky-white. The adult male and female



Figs. 1–4. Life stages of *Aphanogmus floridanus*. 1, Mature larva. 2, Prepupa. 3, Pupa. 4, Adult. The round, black object in Figs. 2 and 3 is the meconium.

are black in general appearance. Ashmead (1893) gave a detailed description of adult coloration.

Of 273 adults that emerged from 452 total cocoons collected in 1979, 1980 and 1981, 30.8% were parasites. In 1982, mean percent parasitizaton was 15.2% (Table 1). Parasitization was highest overall in 1983 when 69.2% of the cecidomyiid larvae were parasitized. Parasitization increased from 0 on April 14 and 20 to a high of 89.7% on May 18. Larval mortality, apparently due to desiccation inside the capsules, averaged 21.4 and 56.1% in 1982 and 1983, respectively. The data show that *A. floridanus* is a substantial mortality factor affecting *F. acarivora* populations. *Feltiella acarivora* was the predominant predator of the two-spotted spider mite on strawberry in southern California in 1978 and 1979 (Oatman et al., 1985). Therefore, parasitization of *F. acarivora* by *A. floridanus* is a major, negating factor in natural control of this serious pest.

Table 1. Parasitization of cecidomyiid larvae collected on strawberry in southern California.

Survey Date	Cocoons Collected	No. Adults Reared[1]		Mean % Parasitization
		Cecidomyiids	Parasites	
		1982		
May 11	16	9	0	0
18	47	36	3	7.7
25	35	23	9	28.1
June 1	164	116	17	12.8
8	87	64	7	9.9
15	103	53	23	30.3
22	90	50	19	27.5
29	83	57	5	8.1
		1983		
Apr. 14	24	17	0	0
20	26	16	0	0
27	81	13	22	62.9
May 4	226	33	61	64.9
11	217	31	82	72.6
18	205	4	35	89.7
25	190	14	74	84.1
June 1	186	15	53	77.9
8	172	17	60	77.9
15	144	22	70	76.1
22	141	36	33	47.8

[1] Adults did not emerge from many of the cocoons, apparently due to desiccation of larvae therein. Such cocoons were not used in calculating percent parasitization.

Acknowledgments

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